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Patent**REMARKS**

Claims 1-30 are in the case.

Claims 1, 20, 28 and 30 have been amended to particularly point out and distinctly claim the subject matter of the claimed invention. Support for the amendments to the claims can be found throughout the original disclosure, e.g., on page 3, line 31 to page 4, line 6; page 5, lines 24-27; page 9, lines 12-14. A marked-up version of the changes made to the claims by the current amendment is attached. The attached pages are captioned **"Version with Markings to Show Changes Made."**

Entry of this amendment is respectfully solicited since it is believed to place the application in condition for allowance, or at a minimum to reduce the issues for appeal.

Applicants respectfully request favorable reconsideration of the subject application in light of the above amendments and the following remarks.

I. Rejection of Claims 1-30 under 35 U.S.C. 102 (b) over Alper et al

Claims 1-30 stand rejected under 35 U.S.C. 102 (b) over US 5,149,741 to Alper et al. (hereafter "Alper") as stated on pages 2-4 of the Office Action.

Applicants respectfully traverse the rejection because Alper fails to teach or suggest a hot melt composition including unconventionally low amount of a high Tg tackfying resin, as recited in the independent claims 1, 20 and 30 as clarified by the amendment. Alper also fails to teach or suggest a hot melt composition including a thermoplastic polymer selected from the group consisting of copolymers and terpolymers

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of ethylene; amorphous polyalphaolefins, homogenous ethylene/ α -olefin interpolymer, and mixtures thereof, as recited in the independent claims 20, 22 and 28.

Independent claims 1, 20, 28 and 30 have been amended to clarify these important aspects of the invention.

As addressed in the specification, both heat resistance and cold temperature resistance are important properties for hot melt adhesives. Traditionally, higher heat resistance is achieved by using e.g., higher amounts of tackifying resin(s), which, however, would adversely affect the cold temperature resistance. Cold temperature resistance is improved by using, e.g., higher amounts of the base polymer, which, on the other hand, would adversely affect the heat resistance. Therefore, it is very difficult to improve both properties simultaneously as one is improved at the cost of the other. (specification, page 2, paragraph 2). Surprisingly, the subject invention has achieved both better heat resistance and cold temperature resistance by using unconventionally lower amounts of the tackifying resin(s) having high glass transition temperature (T_g), as recited in the amended independent claims. (specification, page 5, lines 8-10).

D). The amended independent claim 1 is directed to a hot melt adhesive composition including (a) about 10 wt% to about 50 wt% of at least one substantially aliphatic tackifying resin having a glass transition temperature of greater than 65°C; (b) about 20 wt% to about 60 wt% of at least one thermoplastic polymer as base polymer; and (c) 0 wt% to about 40 wt% of at least one wax. The concentration of the tackifying resin is less than the concentration of the thermoplastic polymer.

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By amending it to recite "thermoplastic polymer as base polymer" and rephrase the term "total polymer concentration" as "the concentration of said thermoplastic polymer" according to the original disclosure (specification, page 3, line 31 to page 4, line 5; page 5, line 25-27; original claim 1), the amended claim 1 particularly points out and distinctly claims what the inventors regard as the invention.

Alper discloses a hot melt pressure sensitive adhesive composition (col. 4, lines 64-65) including (a) 15 to 40 parts by weight of a styrene-isoprene-styrene (SIS) block copolymer; (b) 40 to 70 parts by weight of a compatible tackifying resin; (c) 5 to 30 parts by weight of a plasticizing oil; (d) 0.1 to 2 parts by weight of a stabilizer, and optionally a wax. (col. 4, lines 4-15).

Alper teaches that SIS block copolymer is used as base polymer (col. 1, lines 27-30; col. 2, lines 30-49; col. 3, lines 10-20). Alper also teaches that 15-40 parts SIS block copolymer and 40-70 parts tackifying resin are used in addition to other non-base polymer ingredients, e.g., plasticizing oil, stabilizer, etc. That is, Alper's fundamental definition of his composition expressly teaches that the maximum amount of SIS block copolymer as base polymer is 40 parts and the minimum amount of the tackifying resin is 40 parts. Therefore, Alper teaches that at least equal or more amount of tackifying resin is used relative to the amount of SIS block copolymer as base polymer.

Example 2 of Alper is not to the contrary. Alper specifies in Example 2 an adhesive composition including 35 parts SIS block copolymer as base polymer, 40 parts hydrogenated dicyclopentadiene resin as tackifying resin, 10 parts aromatic reinforcing resin (Endex 155 from Hercules Inc.) and other ingredients e.g., plasticizer, antioxidant, etc. (col. 10, example 2). Clearly, the exemplified amount (40 parts) of at least one

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tackifying resin is more than the exemplified amount (35 parts) of SIS block copolymer as base polymer. Additionally, "10 parts aromatic reinforcing resin (Endex 155 from Hercules Inc.)" in Example 2 of Alper is also a tackifying resin, not a base polymer, as Alper uses the term "polymer" or "copolymer" for the base polymers (Alper, col. 1, line 27-col. 2, line 55) and the term "resin", such as "tackifying resin", "endblock reinforcing resins", "aromatic reinforcing resin", etc. for the non-base-polymer materials or resins added to improve the properties of the adhesive composition throughout the patent. (Alper, col. 3, lines 20-27; col 7, lines 1-48). Thus, the exemplified total amount of tackifying resins in Example 2 of Alper is, in fact, 50 parts (40 parts+10 parts) and the exemplified amount of SIS block copolymer as base polymer is 35 parts. Again and clearly, Alper illustrates an adhesive composition including higher concentration of tackifying resins than that of SIS block copolymer as base polymer. This is entirely consistent, as it must be, with Alper's fundamental definition about the ranges of the components in his composition, as defined on col. 4, lines 4-15 as discussed above.

In contrast, the adhesive composition of claim 1 has less tackifying resin than the thermoplastic polymer as base polymer. That is, the concentration of the tackifying resin is less than the concentration of the thermoplastic polymer as base polymer. Alper, therefore, fails to teach at least that aspect of claim 1. Further, Alper also fails to even remotely suggest the combination of a high T_g tackifying resin with such a low concentration as discussed above.

Alper, failing to teach each and every element of claim 1, does not and cannot anticipate the amended claim 1.

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Dependent claims 2-19 and 29 also cannot be anticipated, *inter alia*, by Alper for the reasons delineated above, because each of them is directed to a combination including everything recited in the corresponding independent claim 1.

II). The amended independent claim 20 is directed to a hot melt adhesive composition including (a) about 10 wt% to about 50 wt% of at least one tackifying resin having a glass transition temperature of at least 65°C; (b) about 20 wt% to about 60 wt% of at least one thermoplastic polymer selected from the group consisting of copolymers and terpolymers of ethylene, amorphous polyalphaolefins, homogenous ethylene/ α -olefin interpolymer, and mixtures thereof; and (c) 0 wt% to about 40 wt% of at least one wax. The concentration of the tackifying resin is less than the concentration of the thermoplastic polymer.

Alper has been discussed in more detail above and that discussion will not repeat here. In brief, Alper teaches an adhesive composition including only SIS block copolymer as thermoplastic polymer, and that the concentration of tackifying resin is equal to or greater than the concentration of the block copolymer, among other things. Evidently, Alper fails to teach an adhesive composition including at least one thermoplastic polymer selected from the group consisting of copolymers and terpolymers of ethylene, amorphous polyalphaolefins, homogenous ethylene/ α -olefin interpolymer, and mixtures thereof. Alper also fails to teach that the concentration of the tackifying resin is less than the concentration of the selected thermoplastic polymer. Alper also fails to even remotely suggest the combination of a high T_g tackifying resin with such a low concentration as discussed above. Alper, therefore, fails to teach at least these elements of claim 20.

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By failing to teach each and every element of claim 20, Alper does not and cannot anticipate the amended claim 20.

Dependent claim 21 also cannot be anticipated, *inter alia*, by Alper for the reasons delineated above, because it is directed to a combination including everything recited in the corresponding independent claim 20.

III). Independent claim 22 is directed to a hot melt adhesive composition including (a) about 10% by weight to about 50% by weight of at least one hydrocarbon tackifying resin derived, at least in part, from dicyclopentadiene and having a T_g of greater than about 65°C; and (b) from about 10% by weight to about 80% by weight of at least one polymer selected from the group consisting of amorphous polyalphaolefins, homogeneous ethylene/ α -olefin interpolymers, and mixtures thereof.

As discussed in more detail above, Alper teaches an adhesive composition including only SIS block copolymer as thermoplastic polymer, among other things. Evidently, Alper fails to teach an adhesive composition including at least one thermoplastic polymer selected from the group consisting of amorphous polyalphaolefins, homogenous ethylene/ α -olefin interpolymers, and mixtures thereof. Alper also fails to even remotely suggest the combination of a high T_g tackifying resin with the selected thermoplastic polymer. Alper, therefore, fails to teach at least those elements of claim 22.

By failing to teach each and every element of claim 22, Alper does not and cannot anticipate the amended claim 22.

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Dependent claims 23-27 also cannot be anticipated, *inter alia*, by Alper for the reasons delineated above, because each of them is directed to a combination including everything recited in the corresponding independent claim 22.

IV). The amended independent claim 28 is directed to a hot melt adhesive composition including (a) from about 10 wt% to about 80 wt% of at least one aliphatic tackifying resin having a T_g of greater than 65°C; and (b) from about 10 wt% to about 80 wt% of at least one polymer selected from the group consisting of amorphous polyalphaolefins, and mixtures thereof.

As discussed in more detail above, Alper teaches an adhesive composition including only SIS block copolymer as thermoplastic polymer, among other things. Evidently, Alper fails to teach an adhesive composition including at least one polymer selected from the group consisting of amorphous polyalphaolefins, and mixtures thereof. Alper also fails to even remotely suggest the combination of a high T_g tackifying resin with the selected thermoplastic polymer. Alper, therefore, fails to teach at least those elements of claim 28.

By failing to teach each and every element of claim 28, Alper does not and cannot anticipate the amended claim 28.

V). The amended independent claim 30 is directed a hot melt adhesive composition comprising (a) about 10 wt% to about 50 wt% of at least one substantially aliphatic tackifying resin having a softening point of greater than 140°C; (b) about 20 wt% to about 60 wt% of at least one thermoplastic polymer; and (c) 0 wt% to about 40 wt% of at least

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one wax. The concentration of the tackifying resin is less than the concentration of the thermoplastic polymer.

As discussed in more detail above, Alper teaches an adhesive composition including a compatible tackifying resin having a softening point or melting point of no greater than 140°C. In contrast, the adhesive composition of claim 30 includes a substantially aliphatic tackifying resin having a softening point of greater than 140°C. In addition, Alper fails to teach that the concentration of the tackifying resin is less than the concentration of the thermoplastic polymer, as discussed in more detail above. Also, Alper fails to even remotely suggest the combination of a high softening point tackifying resin with such a low concentration, as also discussed above. Alper, therefore, fails to teach at least these elements of claim 30.

By failing to teach each and every elements of claim 30, Alper does not and cannot anticipate the amended claim 30.

Accordingly, Applicants submit that the rejection of claims 1-30 under 35 U.S.C. 102 (b) over Alper has been overcome and request that it be withdrawn.

II. Rejection of Claims 1-30 under 35 U.S.C. 103 (a) over Alper et al

Claims 1-30 stand rejected under 35 U.S.C.103(a) over US 5,149,741 to Alper et al. (hereafter "Alper") as stated on pages 2-4 of the Office Action.

As already discussed in more detail above, Alper does not teach or suggest that the concentration of the tackifying resin be less than the concentration of the thermoplastic polymer as recited in the amended independent claims 1, 20 and 30. Nor does Alper teach or suggest that a high Tg tackifying resin be used in combination with

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the less amount to provide a hot melt adhesive composition with good high and cold temperature performance.

Instead, Alper teaches persons skilled in the art to formulate composition in a manner opposite to what is claimed. Indeed, one of Alper's primary objectives is to achieve better hot temperature performance, and Alper does this by using a SIS base copolymer in combination with relatively greater amounts of tackifying resin(s). Alper, in no way, teaches or suggests how to achieve both hot and cold temperature performance as does the subject invention, which is to use less amount of at least one high Tg tackifying resin.

Alper teaches in general that 15-40 parts SIS block copolymer and 40-70 parts tackifying resin are used, among other things. That is, Alper teaches, in general, that at least equal or more amount of tackifying resin is used relative to the amount of SIS block copolymer. Alper specifically teaches in all the examples that higher concentrations of tackifying resin are used. The amounts of tackifying resin and of SIS block copolymer specified in Alper are summarized in the following Table for the Examiner's convenience.

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Table I Amounts of Tackifying Resin and of SIS Block Copolymer in Alper

	Tackifying resin (parts)	SIS block copolymer (parts)
Ex. 1	60	25
Ex. 2	50	35
Ex. 3	60	25
Ex. 4	60	25
Ex. 5	60	25
Ex. 6	60	25
Ex. 7	60	25
Ex. 8	60	25
Ex. 9	60	25
Ex. 10	60	25
Ex. 11	60	20
Ex. 12	58.5	30

As clearly illustrated by Table I, there is no doubt that Alper teaches that the concentration of the tackifying resin(s) is higher than the concentration of the block copolymer, which is clearly opposite to what is claimed. Evidently, the composition with less amount of a high Tg tackifying resin provided by the subject invention would not be obvious to persons skilled in the art following the teachings of Alper.

Furthermore, Alper does not teach or suggest a hot melt composition including a thermoplastic polymer selected from the copolymer and terpolymers of ethylene, copolymers and terpolymers of ethylene, amorphous polyalphaolefins, homogeneous

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ethylene/a-olefin interpolymers, and mixtures thereof, as recited in independent claims 20, 22 and 28.

Alper specifically addresses several shortcomings associated with the use of copolymers of ethylene, e.g., ethylene vinyl acetate copolymers (EVA), and amorphous polypropylene (APP) in formulating the adhesive composition. Alper clearly states that "those skilled in the art will recognize that adhesives based upon EVA or APP cannot generally be formulated as multi-purpose adhesive composition." (emphasis added, Alper, col. 1, line 30 to col. 2, line 29). Alper, therefore, teaches to formulate composition using, instead, a high styrene content SIS block copolymer. (Alper, col. 4, lines 4-67). Obviously, Alper teaches to formulate composition without ethylene vinyl acetate (EVA) or amorphous polypropylene (APP), which is completely different from what is claimed, which is a composition with a thermoplastic polymer selected from copolymer and terpolymers of ethylene, amorphous polyalphaolefins, homogeneous ethylene/a-olefin interpolymers, and mixtures thereof, e.g., EVA, etc. (specification, page 9, lines 20-24 and examples). Evidently, the chemically different composition provided by the subject invention would not be obvious to persons skilled in the art following the teachings of Alper.

Moreover, Alper does not provide any desirability of modifying his high level of tackifying resin to a low level such that the concentration of the tackifying resin would be less than the concentration of the block copolymer. Nor does Alper teach the use of high Tg resin when doing so. Evidently, by teaching to formulate composition with higher amount of the tackifying resin, Alper teaches away from the claimed invention and

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teaching away is "strong evidence of nonobviousness." *In re Hedges*, 783 F.2d 1038, 1041, 228 USPQ 685, 687 (Fed. Cir. 1986).

Furthermore, Alper does not provide any desirability of substituting his high styrene content SIS block copolymer for a thermoplastic polymer selected from copolymers and terpolymers of ethylene, amorphous polyalphaolefins, homogeneous ethylene/alpha-olefin interpolymers, and mixtures thereof. Nor does Alper provide any suggestion or motivation of using high Tg tackifying resin in combination with the selected thermoplastic polymer. In fact, by teaching to formulate composition without ethylene EVA or APP, etc., Alper, again, teaches away from the claimed invention and teaching away is "strong evidence of nonobviousness." *In re Hedges*, 783 F.2d 1038, 1041, 228 USPQ 685, 687 (Fed. Cir. 1986). If it is not shown that the prior art gives a reason or motivation to make the claimed compositions, then there is no *prima facie* case and the applicant should prevail. *In re Grabiak*, 769 f.2d 729 (Fed. Cir. 1985). Such an argument does not require the applicant to make a showing of new or unanticipated results. *Id.*

Although not required, evidence in the specification does demonstrate that the claimed compositions exhibit unexpected properties relative to the compositions such as those of Alper.

For example, the adhesive compositions of Alper, when laminated with substrates, exhibit failure—complete delamination at 100°F (about 38°C), as illustrated by Oven Peel 100 g at 100°F. (Alper, examples 3-6 and 8-11).

In contrast, the claimed compositions do not exhibit a failure until reaching much higher temperatures, e.g., at higher than about 80°C (176°F), as illustrated by the 100g

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Peel temperature. According to the invention, the 100g Peel temperature is the temperature at which the adhesive composition exhibits failure--delamination. As shown in some embodiments, the claimed composition exhibits a 100g Peel temperature of no less than about 60°C (140°F), (Examples 2-4 and 8-10). In other embodiments, The 100g Peel temperature can be higher than about 80°C (176°F), (Examples 6 and 7). Evidently, the claimed compositions exhibit unexpected heat resistance relative to those of Alper.

As addressed above, traditionally, higher heat resistance is generally achieved through the use of higher levels of tackifying resins such as, in fact, taught by Alper. Alper uses high concentration of tackifying resin(s), yet the composition exhibits a bonding failure at only 100°F (about 38°C).

In contrast and surprisingly, the subject invention uses lower concentration of a high Tg tackifying resin than that of the thermoplastic polymer, and the composition exhibits a bonding failure at much higher temperatures, e.g., no less than about 60°C (140°F) or even higher than 80°C (176°F). The superior properties provided by the subject invention would not be obvious to persons skilled in the art upon reviewing the disclosure of Alper. Thus, the unexpected advantages and superior properties offered by the subject invention provide further evidence that the subject invention is not obvious over Alper.

In view of all the forgoing, the adhesive composition of claims 1-30 is patentably distinct from Alper.

Accordingly, Applicants submit that the rejection of claims 1-30 under 35 U.S.C. 103 (a) over Alper has been overcome and request that it be withdrawn.

In view of all the forgoing, Applicants submit that all the rejections have been overcome and the claims pending in the application are now in condition for allowance

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and action in accordance therewith is respectfully requested. In the event that claims are not allowed, Applicants specifically request a personal or telephonic interview if doing so would facilitate the prosecution of this application to allowance.

Respectfully submitted,

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Patent**VERSION WITH MARKINGS TO SHOW CHANGES MADE****In the Specification:**

Paragraph at line 7 of page 1, has been amended as follows:

This application [is a Continuation-In-Part] claims the priority of U.S. provisional patent application serial no. 60/091,231 filed June 30, 1998.

In the Claims:

Claims 1, 20, 28 and 30 have been amended as follows:

1. (three time amended) A hot melt adhesive composition comprising:
- a) about 10% by weight to about 50% by weight of at least one substantially aliphatic tackifying resin having a glass transition temperature of greater than 65°C;
 - b) about 20% by weight to about 60% by weight of at least one thermoplastic polymer as base polymer; and
 - c) 0% by weight to about 40% by weight of at least one wax;
- wherein [said total] the concentration of said tackifying resin [concentration having a glass transition temperature of greater than 65°C] is less than the concentration of said [total] thermoplastic polymer [concentration].
- 20.(three time amended) A hot melt adhesive composition comprising:
- a) about 10% by weight to about 50% by weight of at least one tackifying resin having a glass transition temperature of at least 65°C;

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- b) about 20% by weight to about 60% by weight of at least one thermoplastic polymer selected from the group consisting of copolymers and terpolymers of ethylene; amorphous polyalphaolefins, homogenous ethylene/ α -olefin interpolymer, and mixtures thereof; and
 - c) 0% by weight to about 40% by weight of at least one wax;
- wherein [said total] the concentration of said tackifying resin [concentration having a glass transition temperature of at least 65°C] is less than the concentration of said [total] thermoplastic polymer [concentration].

28.(twice amended) A hot melt adhesive comprising:

- a) from about 10% by weight to about 80% by weight of at least one aliphatic tackifying resin having a T_g of greater than 65°C; and
- b) from about 10% by weight to about 80% by weight of at least one polymer selected from the group consisting of amorphous polyalphaolefins, [rubbery block copolymers] and mixtures thereof.

30.(twice amended) A hot melt adhesive composition comprising:

- a) about 10% by weight to about 50% by weight of at least one substantially aliphatic tackifying resin having a softening point of greater than 140°C;
- b) about 20% by weight to about 60% by weight of at least one thermoplastic polymer; and
- d) 0% by weight to about 40% by weight of at least one wax;

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wherein the concentration of said [total] tackifying resin [concentration having a softening temperature of greater than 140°C] is less than the concentration of said [total] thermoplastic polymer [concentration].